

In re application of: Lonnie O. Ingram et al.  
Application No.: 09/885,294  
Group No.: 1651  
Filed: June 19, 2001  
Response to Notice of Non-Compliant Amendment

### **REMARKS**

Applicants are resubmitting the "Amendments to the Claims " section as per the Notice of Non-Compliant Amendment under 37 CFR 1.121. The Amendment and Response filed on December 1, 2003 was found to be non-compliant because a complete listing of the claims was not presented, and the claims were not presented in ascending numerical order.

Therefore, a replacement complete listing of all of the claims is submitted herewith and have been presented in ascending numerical order. Accordingly, claims 1-55 are pending in the application, with claims 2, 5, 14-17, 34, 35 and 43-55 having been withdrawn from consideration as directed to a non-elected invention. Claims 1, 3, 9, 18, 19, 21-25, 27, 29-31, 33, 38 and 42 have been amended and claims 2, 5, 12-17, 20, 34, 35, 43-55 have been canceled without prejudice or disclaimer. No new matter has been added. Accordingly, claims 1, 3, 4, 6-11, 18, 19, 21-33, and 36-42 will be pending in the application upon entry of this amendment. For the Examiner's convenience, a clean set of the claims that will be pending in the application is attached hereto as Appendix A.

Amendment and cancellation of the claims are not to be construed as an acquiescence to any of the rejections/objections set forth in the instant Office Action, and were done solely to expedite prosecution of the application. Applicants reserve the right to pursue the claims as originally filed, or substantially similar claims, in this or one or more continuation patent applications.

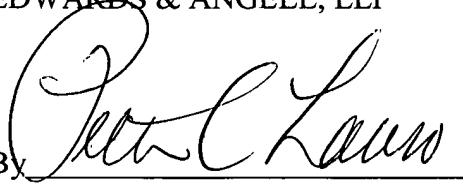
### **CONCLUSION**

In view of the foregoing, reconsideration and withdrawal of all rejections and allowance of the application with claims 1, 3-4, 6-11, 18, 19, 21-33, and 36-42 are respectfully solicited. If there are any remaining issues or the Examiner believes that a telephone conversation with the

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Applicants' attorney would be helpful in expediting prosecution of this application, the Examiner is invited to call the undersigned at telephone number shown below.

Respectfully submitted,  
EDWARDS & ANGELL, LLP

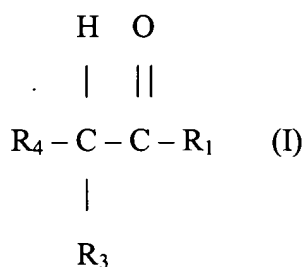
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## APPENDIX A

Claim 1. A method for increasing production of alcohol from a saccharide source by an alcohologenic cell comprising,  
contacting a saccharide source with an alcohologenic cell, and  
exposing said cell to at least one compound of formula I,



wherein;

R<sub>1</sub> is H, or COOR<sub>2</sub>;

R<sub>2</sub> is H or alkyl;

R<sub>3</sub> is H, NH<sub>2</sub>, alkyl or alkenyl;

R<sub>4</sub> is H, alkyl, alkenyl, or a side chain of a naturally occurring amino acid; and  
salts thereof;

wherein said exposing results in the increased production of alcohol by the alcohologenic cell as compared to a control.

Claim 3. The method of claim 1, wherein said compound of formula I is selected from the group consisting of lower aliphatic aldehydes, lower aliphatic  $\alpha$ -keto carboxylic acids, and salts of any of said acids.

Claim 4. The method of claim 1, wherein said alcohol is ethanol and said alcohologenic cell is an ethanologenic cell.

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Claim 6. The method of claim 4, wherein said cell is selected from the family Enterobacteriaceae.

Claim 7. The method of claim 6, wherein said cell is *Escherichia* or *Klebsiella*.

Claim 8. The method of claim 7, wherein said cell is a recombinant cell.

Claim 9. The method of claim 8, wherein said cell is selected from the group consisting of *E. coli* KO4 (ATCC 55123), *E. coli* KO11 (ATCC 55124), *E. coli* KO12 (ATCC 55125), *K. oxytoca* M5A1 (ATCC 68564), *K. oxytoca* P2 (ATCC 55307), and *E. coli* LY01 (ATCC 11303).

Claim 10. The method of claim 4, wherein said compound of formula I is selected from the group consisting of acetaldehyde, and  $\alpha$ -ketoglutarate.

Claim 11. The method of claim 10, wherein said compound of formula I is acetaldehyde.

Claim 18. The method of claim 10, wherein said cell is exposed to glutamate and acetaldehyde.

Claim 19. The method of claim 10, wherein said cell is exposed to pyruvate and acetaldehyde.

Claim 21. The method of claim 10, wherein said cell is exposed to  $\alpha$ -ketoglutarate and succinate.

Claim 22. The method of claim 1, further comprising providing said cell in an aqueous solution.

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Claim 23. The method of claim 1, wherein said saccharide source is selected from the group consisting of cellooligosaccharide, lignocellulose, hemicellulose, cellulose, pectin, xylose, glucose, and any combination thereof.

Claim 24. The method of claim 1, wherein said cell is exposed to said compound of formula I for a period of time between about 1 and about 96 hours.

Claim 25. The method of claim 1, wherein said method is performed at a pH between about 6 and about 8.

Claim 26. The method of claim 25, wherein said method is performed at a pH of about 6.5.

Claim 27. The method of claim 1, wherein said method is performed at a temperature between about 20° and about 40° C.

Claim 28. The method of claim 27, wherein said method is performed at a temperature of about 35° C.

Claim 29. The method of claim 1, wherein said compound is present at a concentration between about 0.1 and about 4.0 g/L.

Claim 30. The method of claim 1, further comprising exposing said cell to said compound more than once.

Claim 31. The method of claim 1, further comprising exposing said cell to two or more different compounds of formula I.

Claim 32. The method of claim 31, wherein said exposing of said cell to said compound is performed at time intervals between about 1 hour and about 24 hours.

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Claim 33. The method of claim 1, further comprising agitating said cell, said saccharide source, and said compound between about 50 rpm and about 200 rpm.

Claim 36. The method of claim 4, wherein said increased production of ethanol is indicated by an increase in volumetric productivity.

Claim 37. The method of claim 36, wherein said volumetric productivity is between about 0.3 g/L and 0.5 g/L.

Claim 38. The method of claim 1, wherein said method is performed in a fermentor vessel.

Claim 39. The method of claim 38, wherein said cell and said saccharide source are provided in an aqueous solution.

Claim 40. The method of claim 39, wherein said aqueous solution comprises a fermentation medium.

Claim 41. The method of claim 40, wherein said fermentation medium comprises Luria broth or CSL broth.

Claim 42. The method of claim 1, wherein said method is suitable for simultaneous saccharification and fermentation.

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